WHAT IS CLAIMED IS:

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1. Apparatus for providing an electrical signal corresponding to a coordinate position on a screen surface of a light source having a cyclically varying intensity, comprising:

detection means for receiving light emitted from said light source and comprising a plurality of photoelectric conversion elements arranged in a predetermined physical array;

difference signal generating means for obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

threshold setting means for setting a threshold value for the difference signal;

SUB A1 CONT'D

selection means for selecting effective photoelectric conversion elements on the basis of the threshold value; and

output means for outputting the difference signals corresponding to the selected effective photoelectric conversion elements.

2. Apparatus according to claim 1, further comprising:

calculation means for performing coordinate calculation on the basis of the difference signals output from the selected effective photoelectric elements; and

output means for outputting a signal corresponding to the calculated coordinate.

3. Apparatus according to claim 2, further comprising:

setting means for detecting the photoelectric conversion element having the maximum difference signal and setting a threshold value based on the difference signals of a predetermined number of photoelectric

SUB A1 CONT'D

conversion elements adjacent the conversion element having the maximum difference signal; and

selection means for selecting effective conversion elements based on the threshold value set by the setting means.

4. Apparatus according to claim 3, wherein:

said detection means comprises a linear array of photoelectric conversion elements;

said setting means is adapted to set the threshold value based on difference signals corresponding to conversion elements situated on both sides of the conversion element having the maximum difference signal.

5. Apparatus according to claim 4, wherein said setting means is adapted to set the threshold value based on difference signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference signal.

SUBA/ CONT'D

6. Apparatus according to claim 5, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

7. Apparatus according to claim 5, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the greater of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

8. Apparatus according to claim 4, wherein:

said setting means is arranged to identify a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

SUBA' CONT'D

said setting means is adapted to set the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

9. Apparatus according to claim 3, wherein said selection means is adapted to select a series of consecutive conversion elements including the conversion element having the maximum difference signal as the effective conversion elements.

10. An apparatus according to claim 2, wherein:

said calculation means is adapted to calculate a centroid position on the basis of the difference signals of the effective conversion elements; and

the calculation means is adapted to calculate a coordinate value based on the position of the centroid.

11. An apparatus according to claim 2, wherein said detection means further comprises:

SUBAI CONT'D

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

12. An apparatus according to claim 11, wherein the threshold setting means is adapted to control the number of times that the integration is performed.

13. An apparatus according to claim 12, wherein the threshold setting means is adapted to control the integration means to perform the integration until the

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value of the largest difference signal exceeds a predetermined value.

14. An apparatus according to claim 12, wherein the threshold setting means is adapted to control the integration means to perform the integration a predetermined number of times.

15. An apparatus according to claim 11, further comprising:

skim means for reducing the value of the output from the photoelectric conversion means when the output from the conversion element at the second points in the cycle of variation of the light source exceeds a predetermined value.

16. An apparatus according to claim 12, further comprising:

skim means for reducing the value of the output from the photoelectric conversion means when the output from the conversion element at the second points in the cycle of variation of the light source exceeds a predetermined value.

SUBA1 CONT'D

17. An apparatus according to claim 13, further comprising:

skim means for reducing the value of the output from the photoelectric conversion means when the output from the conversion element at the second points in the cycle of variation of the light source exceeds a predetermined value.

18. An apparatus according to claim 14, further comprising:

skim means for reducing the value of the output from the photoelectric conversion means when the output from the conversion element at the second points in the cycle of variation of the light source exceeds a predetermined value.

19. An apparatus according to claim 15, wherein the output of each photoelectric conversion means is an electrical charge, and the skim means is operative to remove a predetermined amount of electrical charge from the output of each conversion means.

20. Apparatus according to claim 1, wherein the light source comprises a light spot projected onto the screen from a light emitting element.

21. Apparatus according to claim 1, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

22. Apparatus according to claim 2, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

23. Apparatus according to claim 3, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

24. Apparatus according to claim 4, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

SUB A1 CONTID

25. Apparatus according to claim 5, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

26. Apparatus according to claim 6, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

27. Apparatus according to claim 7, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

28. Apparatus according to claim 8, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

29. Apparatus according to claim 9, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

SUBAI CONT'D

30. Apparatus according to claim 10, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

31. Apparatus according to claim 11, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

32. Apparatus according to claim 12, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

33. Apparatus according to claim 13, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

34. Apparatus according to claim 14, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

SUB A1 CONT'D

35. Apparatus according to claim 15, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

36. Apparatus according to claim 16, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

37. Apparatus according to claim 17, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

38. Apparatus according to claim 18, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

39. Apparatus according to claim 19, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

SUBAI CONT'D

40. Apparatus according to claim 1, wherein the detection means is adapted to receive light diffused through the screen from the said light source.

41. Apparatus according to claim 20, wherein the detection means is adapted to receive light from the said light spot reflectively diffused from the screen.

42. Apparatus according to claim 1, wherein the cyclical variation of the intensity of the light source comprises alternating the intensity of the light source between a first and a second level.

43. Apparatus according to claim 42 wherein the second level corresponds to a state in which no light is emitted.

44. Apparatus according to claim 1, wherein the dimensions of the light source are arranged so that light emitted from

SUBAI CONTID

said light source is incident on a plurality of photoelectric conversion elements of the detection means.

45. A coordinate input apparatus for generating a coordinate output signal corresponding to a predetermined position on a detection surface, comprising:

detection means comprising a plurality of photoelectric conversion elements arranged in a linear array for receiving light emitted from a light source associated with said predetermined position on said detection surface and having a cyclically varying intensity;

difference signal generating means for obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

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threshold setting means for setting a threshold value for the difference signal;

selection means for selecting effective photoelectric conversion elements on the basis of the threshold value; and

coordinate output signal generating means for outputting a coordinate output signal based on the difference signals corresponding to the selected effective conversion elements.

46. A coordinate input apparatus according to claim 45, wherein the threshold setting means is adapted to set a threshold value on the basis of the mean value of the difference signals of the photoelectric conversion elements.

47. A coordinate input apparatus according to claim 45, further comprising:

detection means for detecting the photoelectric conversion element having the maximum difference signal value;

SUBAI CONT'D

identifying means for identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

said setting means is adapted to set the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

48. Apparatus according to claim 45, wherein:

said threshold setting means is adapted to set first and second threshold values for the difference signal, and the apparatus further comprises:

determination means adopted to control the operation of said selection means selects the effective photoelectric conversion elements on the basis of said first and second threshold values.

49. Apparatus according to claim 48, wherein:

said determination means is adapted to determine on the basis of a comparison between said first and second threshold values.

50. A method for providing an electrical signal corresponding to a coordinate position on a screen surface of a light source having a cyclically varying intensity, comprising:

receiving light emitted from said light source by using a plurality of photoelectric conversion elements arranged in a predetermined physical array;

obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

setting a threshold value for the difference signal;

SUBA1 CONTID

selecting effective difference signals on the basis of the threshold value; and

outputting the selected difference signals.

51. A method according to claim 50, further comprising the steps of:

performing coordinate calculation on the basis of the output difference signals; and

outputting a signal corresponding to the calculated coordinate.

52. A method according to claim 51, further comprising the steps of:

detecting the photoelectric conversion element having the maximum difference signal and setting a threshold value based on the difference signals of a predetermined number of photoelectric conversion elements positioned adjacent the photoelectric conversion element having the maximum difference signal; and

SUBA1 CONTID

selecting effective difference signals based on the set threshold value.

53. A method according to claim 52, wherein:

a linear array of photoelectric conversion elements is used in said setting step, and including the step of

setting the threshold value on the basis of difference signals corresponding to conversion elements situated on both sides of the conversion element having the maximum difference signal.

54. A method according to claim 53, including the step of:

setting the threshold value on the basis of difference signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference data.

55. A method according to claim 54, including the step of:

SUBA1 CONTID

setting the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference data as the threshold value.

56. A method according to claim 54, including the step of setting the difference signal corresponding to the greater of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference data as the threshold value.

57. A method according to claim 53, including the steps of:

identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference data; and

setting the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

SUBA1 CONT'D

58. A method according to claim 52, including the step of selecting the difference signals corresponding to a series of consecutive conversion elements including the conversion element having the maximum difference data as the effective difference signals.

59. A method according to claim 51, further including the steps of:

calculating a centroid position on the basis of the effective difference signals; and

calculating a coordinate value based on the position of the centroid.

60. A method according to claim 51, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

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integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference data calculated from the integrated output values of the conversion elements.

61. A method according to claim 60, including the step of controlling the number of times that the integration is performed.

62. A method according to claim 61, including the step of controlling the integration step to perform the integration until the value of the largest difference signal exceeds a predetermined value.

SUBA1 CONTID

63. A method according to claim 61, including the step of controlling the integration step to perform the integration a predetermined number of times.

64. A method according to claim 60, further comprising the step of:

reducing the value of the outputs from the photoelectric conversion elements when the outputs from the conversion elements at the second points in the cycle of variation of the light source exceed a predetermined value.

65. A method according to claim 61, further comprising the step of:

reducing the value of the outputs from the photoelectric conversion elements when the outputs from the conversion elements at the second points in the cycle of variation of the light source exceed a predetermined value.

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66. A method according to claim 62, further comprising the step of:

reducing the value of the outputs from the photoelectric conversion elements when the outputs from the conversion elements at the second points in the cycle of variation of the light source exceed a predetermined value.

67. A method according to claim 63, further comprising the step of:

reducing the value of the outputs from the photoelectric conversion elements when the outputs from the conversion elements at the second points in the cycle of variation of the light source exceed a predetermined value.

68. A method according to claim 64, wherein the output of each photoelectric conversion element is an electrical charge, and the step of reducing the value of the output comprises removing a predetermined amount of electrical charge from the output of each conversion element.

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69. A method according to claim 50, wherein the light source comprises a light spot projected onto the screen from a light emitting element.

70. A method according to claim 50, wherein the light source comprises a light-emitting element positioned adjacent to the screen.

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71. A method according to claim 50, wherein the received light is a diffused light passing through the screen from the said light source.

72. A method according to claim 69, wherein the received light is a light from said light spot reflectively diffused from the screen.

73. A method according to claim 50, wherein the cyclical variation of the intensity of the light source comprises

alternating the intensity of the light source between a first and a second level.

74. A method according to claim 73, wherein the second level of the intensity of the light source corresponds to a state in which no light is emitted.

SUBA3 CONT'D

75. A method according to claim 50, wherein the dimensions of the light source are arranged so that light emitted from said light source is incident on a plurality of photoelectric conversion elements.

76. A method for providing an electrical signal corresponding to a coordinate position on a screen surface of a light source having a cyclically varying intensity, comprising:

receiving light emitted from said light source by using a plurality of photoelectric conversion elements arranged in a predetermined physical array;

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obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

setting first and second threshold values for the difference signals; and

determining whether or not a selection of the effective difference signals is executed on the basis of the first and second threshold values.

77. A method according to claim 76, including the step of controlling the determining step to determine the effective difference signals on the basis of a comparison between the first and second threshold values.

78. A method according to claim 76, further comprising the steps of:

SUBA3 CONTID

performing coordinate calculation on the basis of the selected difference signals; and

outputting a signal corresponding to the calculated coordinate.

79. A method according to claim 77, further comprising the steps of:

detecting the photoelectric conversion element having the maximum difference signal and setting the second threshold value based on the difference signals of a predetermined number of photoelectric conversion elements positioned adjacent the photoelectric conversion element having the maximum difference signal; and

selecting effective difference signals based on the second threshold value.

80. A method according to claim 79, wherein:

a linear array of photoelectric conversion elements is used in said setting step, and including the step of

setting the second threshold value on the basis of difference signals corresponding to conversion elements situated on both sides of the conversion element having the maximum difference signal.

81. A method according to claim 80, including the step of:

setting the second threshold value on the basis of difference signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference data.

82. A method according to claim 81, including the step of:

setting the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference data as the second threshold value.

83. A method according to claim 81, including the step of setting the difference signal corresponding to the greater

SUB A3 CONTID

of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference data as the second threshold value.

84. A method according to claim 80, including the steps of:

identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference data; and

setting the second threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

85. A method according to claim 78, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second

SUBA3 CONT'D

points in successive cycles of variation of the light source; and

setting the first and second threshold values on the basis of difference data calculated from the integrated output values of the conversion elements.

86. A method according to claim 76, including the step of:

setting the first threshold value on the basis of a mean of the obtained difference signals.

87. A coordinate input method for generating a coordinate output data corresponding to a predetermined position on a detection surface, comprising the steps of:

receiving light emitted from a light source associated with said predetermined position on said detection surface and having a cyclically varying intensity by using a plurality of photoelectric conversion elements arranged in a linear array;

SUBA3 CONT'D

obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

setting a threshold value for the difference data;

selecting effective difference signals on the basis of the threshold value; and

outputting a coordinate output signal based on the selected effective difference signals.

88. A coordinate input method according to claim 87, comprising the steps of setting the threshold value on the basis of the mean value of the difference signals of the photoelectric conversion elements.

89. A coordinate input method according to claim 87, further comprising the step of:

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detecting the photoelectric conversion element having the maximum difference signal;

identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

90. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 50.

91. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 51.

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92. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 52.

93. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 53.

94. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 54.

95. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 55.

96. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 56.

SUBA3 CONT'D

97. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 57.

98. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 58.

99. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 59.

100. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 60.

Claims for USA

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101. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 61.

102. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 62.

103. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 63.

104. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 64.

105. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 65.

SUB A3 CONT'D

106. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 66.

107. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 67.

108. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 68.

109. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 69.

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110. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 70.

111. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 71.

112. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 72.

113. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 73.

114. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 74.

SUBA3 CONT'D

115. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 75.

116. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 76.

117. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 77.

118. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 78.

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119. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 79.

120. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 80.

121. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 81.

122. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 82.

123. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 83.

SUBA3 CONT'D

124. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 84.

125. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 85.

126. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 86.

127. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 87.

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128. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 88.

129. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 89.

130. A selection means for use in a coordinate input apparatus for generating a coordinate output signal from output signals of an array of photoelectric conversion elements, comprising:

difference signal receiving means for receiving a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

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threshold setting means for setting a threshold value for the difference signal;

selection means for selecting effective difference signals on the basis of the threshold value; and

output means for outputting the selected effective difference signals.

131. A selection means according to claim 130, wherein the threshold setting means is adapted to set a threshold value on the basis of the mean value of the difference signals.

132. A selection means according to claim 130, further comprising:

detection means for detecting the photoelectric conversion element having the maximum difference signal value;

identifying means for identifying a number m of consecutive conversion elements situated on either side of

SUB A3 CONT'D

the conversion element having the maximum difference signal; and wherein

said threshold setting means is adapted to set the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

133. A coordinate input apparatus including a selection means according to claim 130, further comprising:

coordinate output signal generating means for outputting a coordinate output signal based on the selected effective difference signals.

134. A coordinate input apparatus including a selection means according to claim 131, further comprising:

coordinate output signal generating means for outputting a coordinate output signal based on the selected effective difference signals.

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135. A coordinate input apparatus including a selection means according to claim 132, further comprising:

coordinate output signal generating means for outputting a coordinate output signal based on the selected effective difference signals.

136. A selection method for selecting effective data for use in a method for generating a coordinate output signal from output signals of an array of photoelectric conversion elements the selection method comprising the steps of:

receiving a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the light source and the output at a second, lower intensity, point in the said cycle;

setting a threshold value for the difference signal;

selecting effective difference signals on the basis of the threshold value; and

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outputting the selected effective difference signals.

137. A selection method according to claim 136, wherein the threshold value is set on the basis of the mean value of the difference signals.

138. A selection input method according to claim 136, further comprising:

detecting the photoelectric conversion element having the maximum difference signal value;

identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

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139. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 136.

140. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 137.

141. A data carrier carrying processor-implementable instructions for carrying out a method comprising the steps of claim 138.

142. Apparatus for providing an electrical signal corresponding to a position on a screen surface of a light source having a cyclically varying intensity, comprising

display means for displaying an image on the screen surface;

detection means for receiving light from the screen

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surface and comprising a plurality of photoelectric conversion elements arranged in a predetermined physical array;

difference signal generating means for obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the intensity of the light source and the output at a second, lower intensity, point in the said cycle;

threshold setting means for setting a threshold value for the difference signal;

selection means for selecting effective photoelectric conversion elements on the basis of the threshold value; and

coordinate output signal generating means for outputting a coordinate output signal based on the difference signals corresponding to the selected effective photoelectric conversion elements.

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143. Apparatus according to claim 142, wherein:

said detection means comprises a linear array of photoelectric conversion elements; and

said setting means is adapted to set the threshold value based on difference signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference signal.

144. Apparatus according to claim 143, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

145. Apparatus according to claim 143, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the greater of the

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difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

146. Apparatus according to claim 143, wherein said threshold setting means is adapted to set the threshold value based on the difference signals of a predetermined number of photoelectric conversion elements adjacent the conversion element having the maximum difference signal.

147. Apparatus according to claim 146, wherein:

said setting means is arranged to identify a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

said setting means is adapted to set the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

SUBA3 CONT'D

148. Apparatus according to any of claim 142, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

149. Apparatus according to any of claim 143, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation

SUBA3 CONT'D

of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

150. Apparatus according to any of claim 144, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted

SUB A3 CONT'D

to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

151. Apparatus according to any of claim 145, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

152. Apparatus according to any of claim 146, wherein

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said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

153. Apparatus according to any of claim 147, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective

SUBA3 CONT'D

outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

154. Apparatus according to claim 142, wherein:

said detection means comprises a two-dimensional array of photoelectric conversion elements; and

said setting means is adapted to set the threshold value based on difference signals corresponding to a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

155. Apparatus according to claim 154, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the smaller of the

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difference signals of a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

156. Apparatus according to claim 154, wherein said setting means is adapted to set the threshold value at the difference signal corresponding to the greater of the difference signals of a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

157. Apparatus according to claim 142, wherein

said detection means comprises a two-dimensional array of photoelectric conversion elements; and

said threshold setting means is adapted to set the threshold value based on the difference signals of a predetermined number of photoelectric conversion elements adjacent the conversion element having the maximum difference signal.

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158. Apparatus according to claim 156, wherein:

said setting means is arranged to identify a number m of contiguous conversion elements situated adjacent the conversion element having the maximum difference signal; and

said setting means is adapted to set the threshold value based on difference signals corresponding to the identified conversion elements and the maximum difference signal.

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159. Apparatus according to claim 148, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

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and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

160. Apparatus according to claim 149, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

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161. Apparatus according to claim 150, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

162. Apparatus according to claim 151, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation

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of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

163. Apparatus according to claim 152, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted

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to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

164. Apparatus according to claim 153, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

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165. Apparatus according to claim 154, wherein said

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detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

166. Apparatus according to claim 155, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective

outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

167. Apparatus according to claim 156, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals

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calculated from the integrated output values of the conversion elements.

168. Apparatus according to claim 157, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

169. Apparatus according to claim 158, wherein said detection means further comprises:

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integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

170. A method for providing an electrical signal corresponding to a position on a screen surface of a light source having a cyclically varying intensity, comprising

displaying an image on the screen surface;

receiving light from the screen surface by using a plurality of photoelectric conversion elements arranged

SUB AS CONT'D

in a predetermined physical array;

obtaining a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the intensity of the light source and the output at a second, lower intensity, point in the said cycle;

setting a threshold value for the difference signal;

selecting effective photoelectric conversion elements on the basis of the threshold value; and

outputting a coordinate output signal based on the difference signals corresponding to the selected effective photoelectric conversion elements.

171. A method according to claim 170, wherein:

a linear array of photoelectric conversion elements is used in said setting step, and including the step of:

setting the threshold value based on difference

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signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference signal.

172. A method according to claim 171, including the step of:

setting the threshold value at the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

173. A method according to claim 171, including the step of:

setting the threshold value at the difference signal corresponding to the greater of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

174. A method according to claim 170, including the step

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of:

setting the threshold value based on the difference signals of a predetermined number of photoelectric conversion elements adjacent the conversion element having the maximum difference signal.

175. A method according to claim 174, including the steps of:

identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

176. A method according to claim 170, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first

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points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

177. A method according to claim 171, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light

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source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

178. A method according to claim 172, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

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179. A method according to claim 173, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

180. A method according to claim 174, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light

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source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

181. A method according to claim 175, wherein said detection step further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

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setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

182. A method according to claim 170, wherein:

a two-dimensional array of photoelectric conversion elements is used in said setting step, and including the step of:

setting the threshold value based on difference signals corresponding to a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

183. A method according to claim 182, including the step of:

setting the threshold value at the difference signal corresponding to the smaller of the difference signals of a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

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184. A method according to claim 182, including the step of:

setting the threshold value at the difference signal corresponding to the greater of the difference signals of the a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

185. A method according to claim 170, wherein:

a two-dimensional array of photoelectric conversion elements is used in said setting step, and including the step of:

setting the threshold value based on the difference signals of a predetermined number of photoelectric conversion elements adjacent the conversion element having the maximum difference signal.

186. A method according to claim 185, including the steps of:

identifying a number m of contiguous conversion elements situated adjacent the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the identified conversion elements and the maximum difference signal.

187. A method according to claim 182, wherein said detection means further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of

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the conversion elements.

188. A method according to claim 183, wherein said detection means further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

189. A method according to claim 184, wherein said detection means further comprises:

integrating the respective outputs of each

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photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

190. A method according to claim 185, wherein said detection means further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second

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points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

191. A method according to claim 186, wherein said detection means further comprises:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

setting the threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

186 ~~192.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~170.~~ 164.

187 ~~193.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~171.~~ 165.

188 ~~194.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~172.~~ 166.

189 ~~195.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~173.~~ 167.

190 ~~196.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~174.~~ 168.

191 ~~197.~~ A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~175.~~ 169.

192 ~~198.~~ A data carrier carrying instructions implementable

by a processor for carrying out the method of claim ~~176~~ 170.

193 ~~199~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~177~~ 171.

194 ~~200~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~178~~ 172.

195 ~~201~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~179~~ 173.

196 ~~202~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~180~~ 174.

197 ~~203~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~181~~ 175.

198 ~~204~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~182~~ 176.

199 ~~205~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~183~~ 178.

200 ~~206~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~184~~ 179.

201 ~~207~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~185~~ 180.

202 ~~208~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~186~~ 181.

203 ~~209~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~187~~ 182.

204 ~~210~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~188~~ 183.

205 ~~211~~. A data carrier carrying instructions implementable

by a processor for carrying out the method of claim ~~189~~ 184.

206 ~~212~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~190~~ 185.

207 ~~213~~. A data carrier carrying instructions implementable by a processor for carrying out the method of claim ~~191~~ 186.

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214. Coordinate input apparatus for use with a processor provided with a display means capable of displaying images on a screen surface, the coordinate input apparatus comprising:

designation means for providing on the screen surface a light spot having a cyclically varying intensity;

detection means for receiving light emitted from said light source and comprising a plurality of photoelectric conversion elements arranged in a predetermined physical array and for providing an

electrical output on the basis of the received light;

a data carrier carrying instructions implementable by the processor for carrying out the following steps:

calculating a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the intensity of the light spot, and the output at a second, lower intensity, point in the cycle of variation of the intensity of the light spot;

setting a threshold value for the difference signal corresponding to each of the photoelectric conversion elements;

selecting effective photoelectric conversion elements on the basis of the threshold value; and

generating coordinate output signal on the basis of the difference signals of the selected effective photoelectric conversion elements.

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215. Coordinate input apparatus according to claim 214, wherein the data carrier carries processor implementable instructions for:

setting the threshold value based on the difference signals of a predetermined number of photoelectric conversion elements adjacent the conversion element having the maximum difference signal.

216. Coordinate input apparatus according to claim 214, wherein:

said detection means comprises a linear array of photoelectric conversion elements, and the data carrier carries processor implementable instructions for:

setting the threshold value based on difference signals corresponding to two conversion elements equally spaced from the conversion element having the maximum difference signal.

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217. Coordinate input apparatus according to claim 216, wherein the data carrier carries processor implementable instructions for:

setting the threshold value at the difference signal corresponding to the smaller of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

218. Coordinate input apparatus according to claim 216, wherein the data carrier carries processor implementable instructions for:

setting the threshold value at the difference signal corresponding to the greater of the difference signals of the two conversion elements equally spaced from the conversion element having the maximum difference signal.

219. Coordinate input apparatus according to claim 215, wherein the data carrier carries processor implementable instructions for:

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identifying a number m of consecutive conversion elements situated on either side of the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the 2m identified conversion elements and the maximum difference signal.

220. Coordinate input apparatus according to claim 215, wherein the data carrier carries processor implementable instructions for:

integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source;

integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source; and

said setting means is adapted to set the threshold

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on the basis of difference signals calculated from the integrated output values of the conversion elements.

221. Coordinate input apparatus according to claim 215, wherein said detection means further comprises:

integration means for integrating the respective outputs of each photoelectric conversion element at a number of first points in successive cycles of variation of the light source and for integrating the respective outputs of each photoelectric conversion element at a number of second points in successive cycles of variation of the light source;

and wherein the threshold setting means is adapted to set a threshold on the basis of difference signals calculated from the integrated output values of the conversion elements.

222. Coordinate input apparatus according to claim 214, wherein:

said detection means comprises a two-dimensional array of photoelectric conversion elements, and the data carrier carries processor implementable instructions for:

setting the threshold value based on difference signals corresponding to a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

223. Coordinate input apparatus according to claim 222, wherein the data carrier carries processor implementable instructions for:

setting the threshold value at the difference signal corresponding to the smallest of the difference signals of a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

224. Coordinate input apparatus according to claim 222, wherein the data carrier carries processor implementable

instructions for:

setting the threshold value at the difference signal corresponding to the greater of the difference signals of a number of conversion elements equally spaced from the conversion element having the maximum difference signal.

225. Coordinate input apparatus according to claim 213, wherein the data carrier carries processor implementable instructions for:

identifying a number m of consecutive conversion elements situated on each side of the conversion element having the maximum difference signal; and

setting the threshold value based on difference signals corresponding to the identified conversion elements and the maximum difference signal.

226. Coordinate input apparatus for use with a processor provided with a display means capable of displaying images on a screen surface, the coordinate input

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apparatus comprising:

designation means for providing on the screen surface a light spot having a cyclically varying intensity;

detection means for receiving light emitted from said light source and comprising a plurality of photoelectric conversion elements arranged in a predetermined physical array and for providing an electrical output on the basis of the received light;

instructions for operating the processor for carrying out the following steps:

calculating a difference signal for each photoelectric conversion element corresponding to the difference between the output of the photoelectric conversion element at a first, higher intensity, point in the cycle of variation of the intensity of the light spot, and the output at a second, lower intensity, point in the cycle of variation of the intensity of the light spot;

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setting a threshold value for the difference signal;

selecting effective photoelectric conversion elements on the basis of the threshold value; and

generating coordinate output signal on the basis of the difference signals of the selected effective photoelectric conversion elements.

227. Coordinate input apparatus according to claim 226, wherein the instructions for operating the processor comprise a data carrier bearing processor implementable instructions.

228. Coordinate input apparatus according to claim 226, wherein the instructions for operating the processor include a data carrier.

229. Coordinate input apparatus according to claim 228, wherein the data carrier is a signal downloaded over a communication network.